

Computer Vision 21/22 - Class Planning

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Date	Title and contents (21/22)
11/10/2021 (online)	Title: Presentation Content: <ul style="list-style-type: none"> ● Presentation of the details of the Curricular Unit
12/10/2021 – TP1 16/10/2021 – TP2	Title: Themes for the Project Content: <ul style="list-style-type: none"> ● Presentation of the themes for the project to be carried out ● Formation of working groups for the project
18/10/2021 (online)	Title: TP1 - Image Formation Content: <ul style="list-style-type: none"> ● Introduction to Computer Vision ● Human visual system ● Image capture systems
19/10/2021 – TP1 21/10/2021 – TP2	Title: TP2 - Digital Image Content: <ul style="list-style-type: none"> ● Sampling and quantization ● Data structures for digital imaging
25/10/2021 (online)	Title: TP3 - Frequency Space Content: <ul style="list-style-type: none"> ● Fourier Transform ● Frequency space ● Spatial convolution
26/10/2021 – TP1 28/10/2021 – TP2	Title: TP4 - Color and Noise Content: <ul style="list-style-type: none"> ● Color spaces ● Color processing ● Noise
01/11/2021 (online)	Holiday - All Saints' Day
02/11/2021 – TP1 04/11/2021 – TP2	Title: TP5 – Single pixel manipulation Content: <ul style="list-style-type: none"> ● Dynamic range manipulation ● Neighborhoods and connectivity ● Image arithmetics
08/11/2021 (online)	Title: TP6 - Spatial Filters Content: <ul style="list-style-type: none"> ● Spatial filters

	<ul style="list-style-type: none"> ● Filtering in the frequency domain ● Edge detection ● Morphological filters
09/11/2021 – TP1 11/11/2021 – TP2	Title: Support for project implementation
15/11/2021 (online)	Title: TP7 - Pattern Recognition Content: <ul style="list-style-type: none"> ● Introduction to pattern recognition ● Statistical pattern recognition and machine learning ● Visual descriptors ● Local invariant descriptors
16/11/2021 – TP1 18/11/2021 – TP2	Title: TP8 - Statistical Classifiers Content: <ul style="list-style-type: none"> ● Statistical classifiers ● Generalization ● k-NN ● Support vector machines ● Neural networks
22/11/2021 (online)	Title: TP9 - Introduction to deep learning Content: <ul style="list-style-type: none"> ● What is deep learning? ● Convolutional neural networks ● Deep neural network architectures
23/11/2021 – TP1 25/11/2021 – TP2	Title: TP10 - Deep learning - Resources and examples Content: <ul style="list-style-type: none"> ● Deep Learning Resources ● Examples
29/11/2021 (online)	Title: TP11 - Introduction to Segmentation Content: <ul style="list-style-type: none"> ● Introduction to segmentation ● Thresholding ● Region-based segmentation ● Segmentation by clustering
30/11/2021 – TP1 02/12/2021 – TP2	Title: Support for project implementation
06/12/2021 (online)	Title: TP12 - Advanced Segmentation Content: <ul style="list-style-type: none"> ● Segmentation by fitting ● Active contours ● Semantic segmentation
07/12/2021 - TP1 09/12/2021 – TP2	Title: Support for project implementation
13/12/2021 (online)	Title: TP13 - Advanced Deep Learning Topics - I Content:

	<ul style="list-style-type: none"> • Auto encoders • Deep learning for semantic segmentation
14/12/2021 - TP1 16/12/2021 – TP2	Title: Support for project implementation
03/01/2022 (online)	Title: TP14 - Advanced Deep Learning Topics II Content: <ul style="list-style-type: none"> • Class activation maps • Generative adversarial networks
04/01/2022 – TP1 06/01/2022 – TP2	Title: Support for project implementation
10/01/2022 (online)	Title: Public presentations of the developed projects
11/01/2022 – TP1 13/01/2022 – TP2	Title: Public presentations of the developed projects

Classes taught by Prof. Miguel Coimbra
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